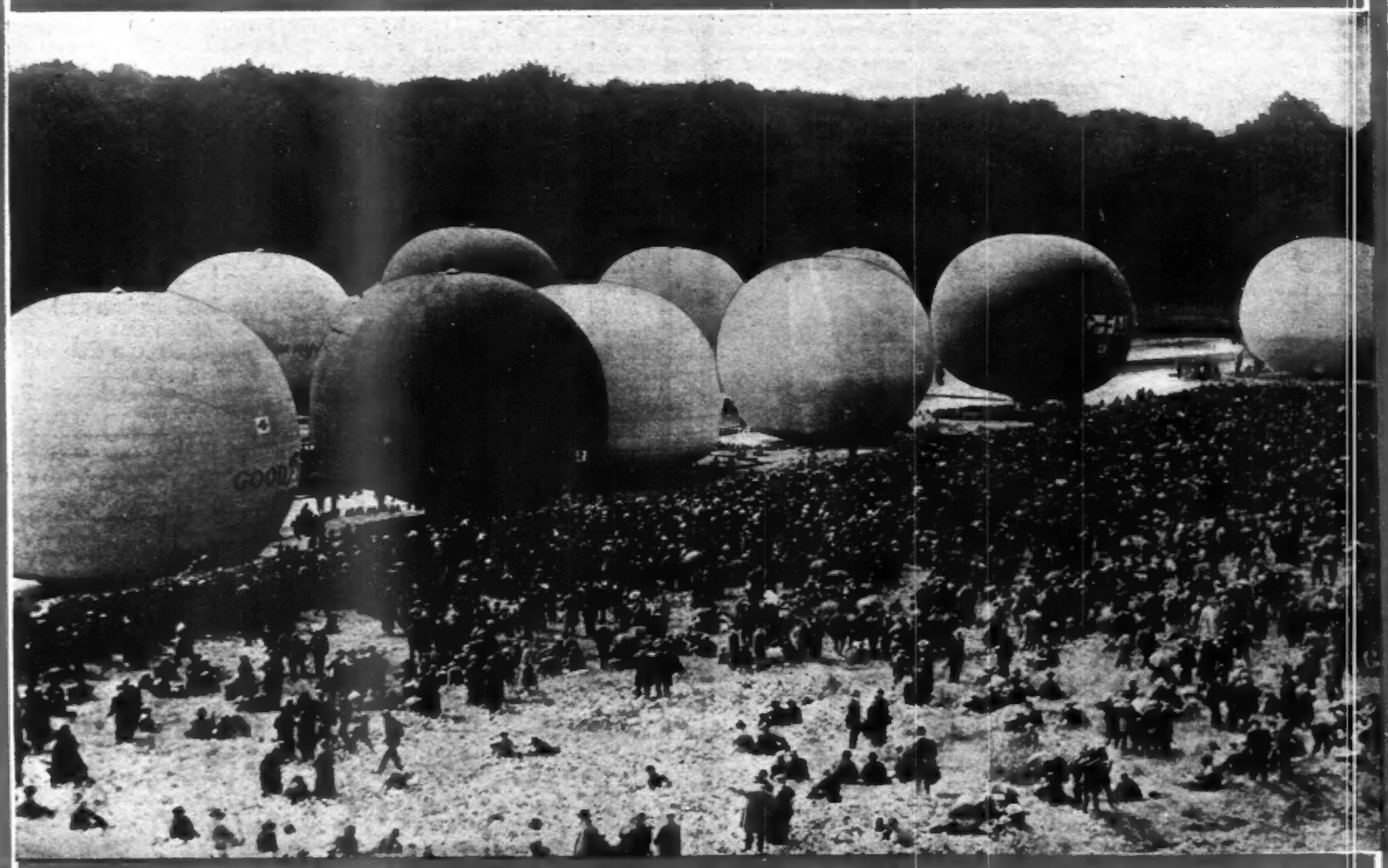
AVIATION

The Oldest American Aeronautical Magazine

JULY 14, 1924 **Issued Weekly** **PRICE 10 CENTS**



Start of the last Gordon Bennett balloon race at Brussels, Belgium

International Newsreel Photo

VOLUME XVII

NUMBER 2

SPECIAL FEATURES

MITCHEL FIELD AIR DEMONSTRATION

CURTISS PW8 PURSUIT PLANE DESCRIBED

PRACTICAL VALUE OF REFUELING IN FLIGHT

THROUGH GOING COAST TO COAST AIR MAIL STARTS

GARDNER PUBLISHING CO., Inc.

HIGHLAND, N. Y.

225 FOURTH AVENUE, NEW YORK

Entered as Second-Class Matter, Nov. 22, 1920, at the Post Office at Highland, N. Y. under Act of March 3, 1879.

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VOL. XVII. NO. 2

Published every Monday

CONTENTS

GARDNER PUBLISHING COMPANY, Inc., *Publishers*

GENERAL AND EDITORIAL ROOMS: 225 FOURTH AVENUE, NEW YORK

Publication office

HIGHLAND, N. Y.

Subscription price: Four dollars per year. Single copies ten cents. Canada, five dollars. Foreign, six dollars a year. Copyright 1924, by the Gardner Publishing Company.

Issued every Monday. Forms close ten days previously. Entered as second-class matter Nov. 22, 1920, at the Post Office at Highland, N. Y., under act of March 3, 1879.

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AVIATION

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Vol. XVII JULY 14, 1924 No. 2

Great Aviation Progress

THE three great achievements of the past few weeks in aviation have been a new inspiration to those whose spirits were somewhat below par and who needed some stimulant to kindle their faith in the ultimate triumph of aviation.

The successful inauguration of the through going transcontinental service of the Air Mail is so full of possibilities for the future that it is perhaps better to speak of them at this time with reserve. In dealing with a public service of this kind, some small or large interference with the regular operation might have an effect much broader than would be warranted by the incident itself. With the fullest recognition of the vast field that this test has opened for aircraft, and with an equally intimate acquaintance with the limitations under which any new experiment of this kind is made, it is appropriate to simply express our congratulations to the Air Mail Service for the foresight of those in charge of the organization and for the efficient manner in which the whole operation was carried through.

The transcontinental Dawn to Dusk flight of Lieutenant Maughan's shows once more the determination of the American pilot and constructor to lead the world in speed, distance and reliability. Lieutenant Maughan's return trip to Mitchel Field makes his accomplishment not only a record flight in one direction but a record round trip as well, indicating the serviceability of the new Curtiss pursuit plane and the pilot's faith in this ship. The Dawn to Dusk flight, together with Lieutenant Maughan's previous speed records, stamps this Army flier as one of the premier pilots of the world.

The continued satisfactory progress of the American round the world flight is the third encouraging aeronautical event that is to be credited to the past month. Now that our three world fliers have India behind them, their flying will be over much easier ground and in more favorable climatic conditions. Without mishap these skilful and tireless pilots should soon be ready for the last uncertain factor of their great venture—the hop across the Atlantic by way of Iceland and Greenland.

With an even break of luck—all a pilot asks for in the air—they will once more greet native shores in August and they may rest assured that the American people will give them a welcome worthy of their great achievement.

Is This "The Matter"?

WHO has not been asked the question "What is the matter with aviation people? They all seem to be fighting each other and 'knocking' everything new." The answer to this is so evident to the detached observer that it is difficult to see why it should be asked repeatedly and so continuously.

Two or three questions might develop the real trouble. If everyone in the aviation field had to answer the following questions before his opinion were taken seriously there might be less of the opinionated expressions of criticism that are heard so generally. Try the questions as a test.

How many hours have you been in the air?
What are you doing to promote commercial aviation?
Do you make or expect to make money out of aviation?
What publicity are you getting out of aviation?

If the real amount of flying that has been done by many of those who are the loudest in proclaiming the importance of aviation were known, much of their importance would shrink perceptably.

How anyone in aviation cannot take a personal interest in encouraging the commercial pilot, the pioneer in the new air transportation development, is beyond comprehension, yet it has become a popular attitude in some circles to depreciate the pilot and his work—just because his equipment is obsolete and he is financially embarrassed owing to the tenacity with which he stays in the flying game.

There are many people who are interested in aviation and who take prominent part in all affairs that wish it to appear on the surface that they are patriots or far seeing enthusiasts whereas their main objective is to make money either now or in the future out of their interest.

And finally, and perhaps more important, is the publicity attraction of aviation.

So, "the matter" seems to be that the people who seem to take the most active interest in aeronautical movements are more interested in exploitation than in flying itself.

A Plea for Sanity

AVIATION has for some time been endeavoring to give its readers all the news of interest from the principal flying centers of the United States. How far we have succeeded in this endeavor may be seen from the numerous reports our volunteer correspondents contribute at fairly frequent intervals, and which are printed in the department "Airports and Airways." It is generally admitted that these reports interest all who are concerned with the civil side of flying.

But in this connection it has become necessary to state a few plain and unpleasant truths. There are a few flying centers—not the least important of them, either—where it seems impossible to keep a correspondent on good terms with all concerned. Politics, personal jealousy, or whatever it is, have brought about a situation where it appears that a correspondent is actually refused information by one party if he mentions the activities of another party.

This situation strikes us as highly ludicrous. It is like a man trying to spite his face by cutting off his nose. We can but make a plea for sanity and hope that those concerned will return to a fairer comprehension of matters. Until then we shall print the news items our volunteer correspondents contribute, and ignore those who wish to be ignored.

The Curtiss PW8 Pursuit Plane Described

Story of the Development of this Plane from Racing Experience And its Chief Constructional Features

The Curtiss model PW8 pursuit plane on which Lieut. Russell L. Maughan, A.S., flew from New York to San Francisco between dawn and dusk on June 23, last, in 21 hr. 44 min. elapsed time, is the highest developed single-seater fighter in the world today. Lieutenant Maughan's particular ship was in every way a standard 1924 model, except that supplementary fuel tanks were fitted for the transcontinental flight. In fact the ship was taken from a small production order of PW8 pursuit planes (twenty-five) which the Army Air Service placed with the Curtiss Aeroplane & Motor Co. of Garden City, L. I., last summer. This order has nearly been completed.

A Thoroughly Proprietary Design

This remarkable airplane is the outcome of the concentration of Curtiss engineers on one particular type, in which it was desired to combine maximum speed and maximum climb with other military requirements for fighting planes, such as extensive visibility from the cockpit, facility for parachute jump and general serviceability. It should be noted that this type of ship was not developed as a result of government specifications and proposals: the Curtiss PW8 is a thoroughly proprietary design which was developed by the Curtiss Company at a considerable expense of its own. As a result the Army Air Service has today the best fighting ship in existence, one which is some 10 mi./hr. faster than any other pursuit airplane produced in this country or abroad, and which can easily outclimb any of them.

Design and construction on the original Curtiss Pursuit plane started in the spring of 1922, at the time when the Curtiss Company commenced to apply to airplane racing the results of the extensive research and development work it had been conducting for several years in its aerodynamic laboratory and factory at Garden City. The great advance in airplane design accomplished through this painstaking work was first revealed to the world in the 1922 Pulitzer Trophy race, held at Detroit, which Lieutenant Maughan won on a Curtiss Army racer at an average speed of 205.8 mi./hr., breaking all existing world records for 100 and 200 kilometers distance. Lieut. J. L. Maitland, A.S., finished second in that race at an average speed of 198.8 mi./hr. This twofold triumph was confirmed on Oct. 10, 1922, when Brig. Gen. William Mitchell, A.S., flying the same ship, broke the world's maximum speed record over the one kilometer straightaway course at a speed of 223 mi./hr. It was the first time that an American airplane had beaten the high speed records made by French aviators.

Influence of Airplane Racing

When, in the following spring, Sadi Lecointe recaptured the world speed record by making 233 mi./hr., he did not remain in its possession for long, for on March 29, 1923, at Wilbur Wright Field, Dayton, Ohio, Lieutenant Maughan broke the record once more with 236.5 mi./hr. This record has never been approached since within 10 mi. by any foreign machine, but it was broken by Lieut. A. J. Williams, U.S.N., on Nov. 4, 1923, at Garden City, L. I., when he flew a Curtiss Navy racer with the Curtiss D12A 500 hp. engine over the F.A.I. three kilometer straightaway course at the rate of 266.6 mi./hr. This record is still standing, and the ship and the pilot that made it also won the 1923 Pulitzer Trophy race at a speed of 243.6 mi./hr.

This stupendous succession of speed records affords an explanation of the great advance which the Curtiss PW8 pursuit plane represents with respect to other airplanes of its kind. The Pulitzer Trophy races served the purpose of testing out the ideas evolved in the aerodynamic laboratory and embodied in the ships. When the results confirmed the theory, the new ideas were embodied in the 1924 type Curtiss Pursuit ship, for which the original, 1923 model served as the equivalent of a mockup. Thus the direct and beneficial influence of airplane racing upon the development of military fighting planes becomes self-evident.

One Year's Improvement

The improvement in the performance of this ship is apparent from the following. The 1923 Curtiss Pursuit plane with a D12 *high* compression engine (460 hp.) had a high speed of 170 mi./hr., a landing speed of 62 mi./hr., a climb of 2500 ft. per minute from sea level and a service ceiling of 27,150 ft. The 1924 Curtiss Pursuit plane equipped with the D12 *low* compression engine (420 hp.), Curtiss-Reed metal propeller and a new wing section developed and adopted for the 1923 Pulitzer Trophy race winner, has approximately the same high speed and the same landing speed, but it carries 65 lb. more useful load and it is 50 per cent stronger than the 1923 model, the safety factor having been raised from 8 to 12. Equipped with the D12 high compression engine the PW8 has a high speed of 180 mi./hr. The gross weight of the plane is 3,167 lb., of which 971 lb., or nearly one-third is available as useful load. The range at high speed is approximately 2½ hr.

The armament consists of two Browning machine guns, one of 30 calibre and one of 50 calibre, with 600 rounds of ammunition for the former and 200 rounds for the latter. Provision is also made for the carrying of two 105-lb. demolition bombs or five 25-lb fragmentation bombs.

Cockpit Accommodation

The visibility from the pilot's cockpit—a requirement almost as important to a fighter as high speed and quick climb—is excellent, the pilot being placed well back of the upper wing and the wings having a positive stagger of 37 in. The pilot's eyes are on a level with the chord of the upper wing which position gives the minimum blind spot due to the wing, while the large stagger allows the landing gear wheels to be in full view. The gas tank is crash proof, having a heavy covering of rubber which effectively prevents the gas being sprayed about in event of a crash. The height and fore and aft position of the pilot's seat is adjustable, which makes for ease of operation for different pilots. The horizontal stabilizer is adjustable from the cockpit, while in flight, a fact which the pilot is certain to appreciate when flying under different loading conditions. Space for a parachute is provided by substituting it for the seat cushion normally fitted, and it is worth special mention that owing to the unobstructed position of the pilot's seat parachute jumps can be done without any difficulty and without the hazard of getting entangled in the wings. For night flying, wing tip flares are provided.

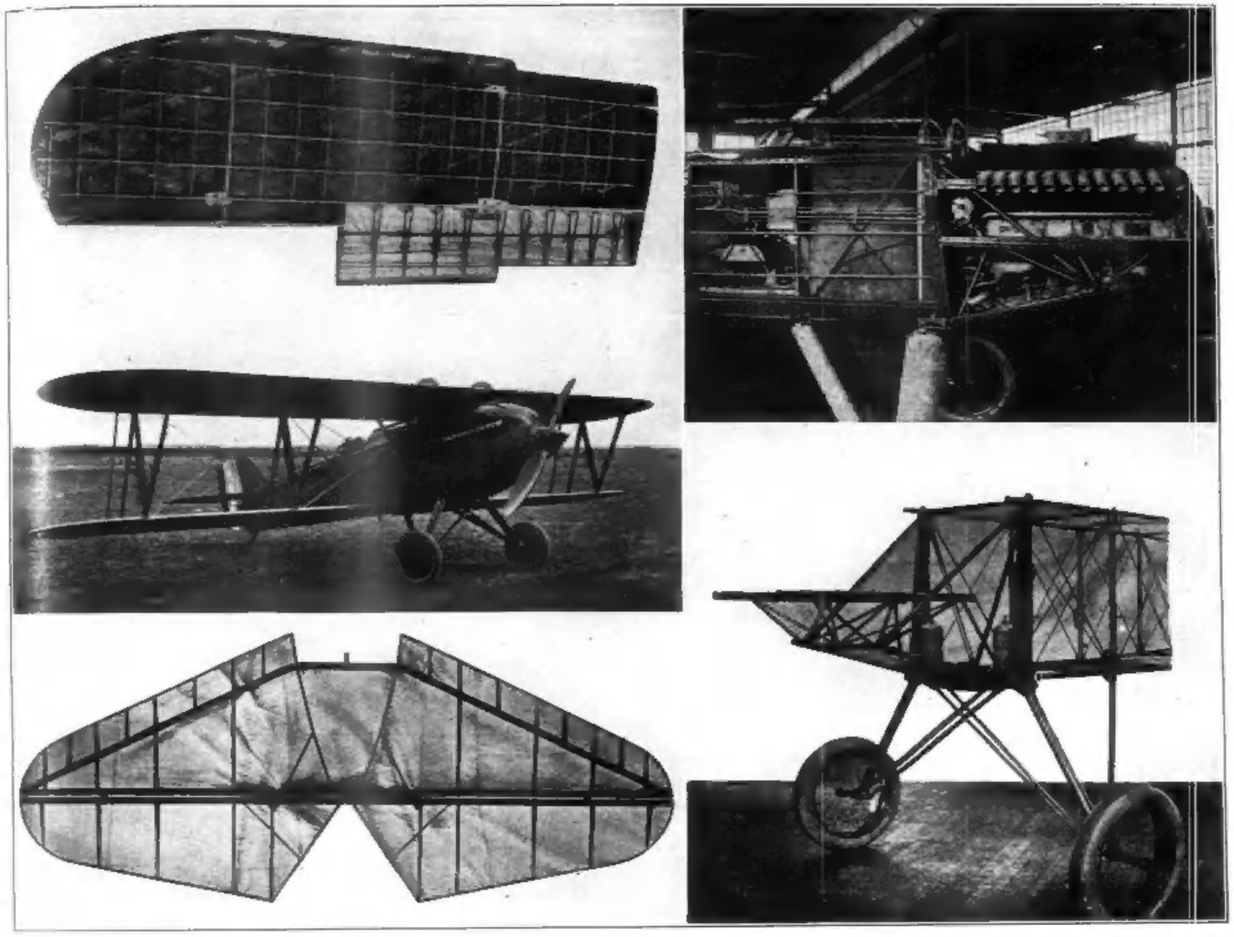
Structurally and mechanically the Curtiss PW8 embodies a great number of interesting features.

The Cellular Wing

The wings are entirely built of wood on the principle of cellular construction and are covered with a special spruce plywood, known as Curtiss-ply. Instead of having two main spars, the wing has multiple spars, which, together with the ribs divide it up into a great number of square cells. The outer covering of Curtiss-ply is shaped to the proper form before it is applied, and therefore fits the wing frame like a mold. It is fastened to the framework with cement, brass screws and cement coated nails.

This type of construction greatly decreases vulnerability to gun fire, for several cells may be shot through without impairing the strength of the structure, whereas a fabric covered wing will tear, when punctured by a bullet, and it will tear over the greater area the greater the speed of the ship, for the air will tend to rush into the aperture so much faster.

The cellular wing construction has the further advantage that it does away with internal drag bracing and so does not need any adjustment, for the wing structure is practically indeformable under ordinary service conditions.



General and detail views of the Curtiss PW8 pursuit plane—Upper left hand corner, cellular wing construction; upper right hand corner, engine installation; center, the PW8; lower left hand corner, steel frame of stabilizer and elevator; lower right hand corner, frontal portion of fuselage, showing engine bed and landing gear with rubber compression discs

The cabane and the interplane struts are steel tubes, faired with spruce and taped. The interplane struts can be adjusted in length by means of threaded terminals. There are no protruding fittings to the wing, all fittings being countersunk. The aileron controls, for which inspection doors are provided, and the motor controls are rigid rods which insure positive action and obviate the necessity of replacing cables worn out by running over pulleys.

A Landing Gear of New Design

The fuselage is built of welded steel tubing, over which a false framework of duralumin channel members is riveted to give it a streamline form once it has its outer covering of fabric. The fuselage is of the four longeron type with welded vertical and horizontal struts, crossbraced by tie rods. The lugs to which the tie rods are attached are welded into suitable slots cut in the tubes, so that no welded part is in tension. All control's and stabilizing surfaces are steel skeletons covered with fabric.

One of the most interesting features of this ship is the landing gear. This is of the axleless type, the wheels being mounted on two V struts, the shock absorbing device of which is carried inside the fuselage, where it is easily accessible. The shock absorbers are in the form of rubber compression discs against which the bearing plate of the landing gear strut works. The compression of the shock absorber is adjusted by simply turning a nut, and hardened rubber discs can be replaced with the greatest ease by slipping them off their guiding rods, thus eliminating the time-wasting practice of rewinding shock absorber cord. That the rubber discs work in compression and not in tension is a particularly desirable feature in arid climates, where rubber will withstand compression with little damage whereas it quickly deteriorates under tension.

The advantage of having an axleless landing gear is evident, for it not only cuts down head resistance but also eliminates the hazard of striking obstruction when taxiing on rough or snow-covered ground.

Engine Mounting Quickly Detachable

The engine mounting is quickly detachable by the removing of four bolts, which allows a new power plant to be installed in a very short time; the cowling and covering of the fuselage is removable in large sections as far back as the cockpit. These sections do not lap at any of the joints, a fact which permits anyone of them to be removed without the necessity of disturbing the others. This quick removal of all covering gives excellent access to all parts of the motor, gas and oil systems, instruments and controls.

The wing radiators are so constructed that the upper and lower surfaces on any panel may be removed separately, thus making repairs exceptionally simple.

The Oil Temperature Regulator

An important mechanical feature adopted for this ship is the installation of an oil temperature regulator. This regulator comprises a number of honeycomb tubes through which the water from the motor is passed and around which the oil circulates. In starting the motor, the water which is passed through the regulator quickly brings the oil up to the required temperature. The water is brought to its required temperature after the machine is in flight, by the gradual opening of the by-pass valves to the panel radiators. The regulator thus performs two important functions, that of heating the oil on the ground before flight, and that of keeping the oil at the desired temperature after the machine is in the air. In a recent test during zero weather, the ship took the air in less than five minutes after leaving the hangar. This advantage for fighting machines in time of war, can hardly be over estimated.

Following are the specifications of the Curtiss model PW8 pursuit plane, as fitted with the 420 hp. Curtiss D12 low compression engine and with the 460 hp. D12 high compression engine:

SPECIFICATION OF THE CURTISS MODEL PW8 PURSUIT PLANE

Characteristics		*Areas*	
Wing arrangement	Biplane.	Wings (incl. ail.)	279.3 sq. ft.
Use	Pursuit.	Ailerons	30.3 sq. ft.
Crew	One.	Horizontal tail	24.76 sq. ft.
Dimensions		Vertical tail	13.55 sq. ft.
Span, upp. wg.	32 ft.	*Weights*	
Span, low. wg.	32 ft.	Empty	2196 lb.
Length	23 ft. 1 in.	Useful load	971 lb.
Height	9 ft. 1 in.	Gross weight	3167 lb.
Chord, upp. wg.	5 ft. 6 in.	*Loadings*	
Chord, low. wg.	4 ft.	Wing loading	11.33 lb./sq. ft.
Gap	4 ft. 7½ in.	Power loading (L.C. engine)	7.60 lb./hp.
Stagger	37 in.	Power loading (H.C. engine)	6.80 lb./hp.
Incidence	0 deg.		
Dihedral	None.		
Sweepback	None.		
Wing section	C62.		
Factor of safety	12.		

Performance with D12 Low Compression and High Compression Engine

Engine	D12 Low Compression	D12 High Compression
Horsepower	420	460
R.p.m.	2200	2300
Fuel consumption (full)	0.53 lb./hp./hr.	0.58 lb./hp./hr.
Oil consumption	0.015 lb./hp./hr.	0.015 lb./hp./hr.
Fuel used	Aviation gasoline	50-50 benzol-gas
Fuel capacity	77 gal.	77 gal.
Oil capacity	8 gal.	8 gal.
High speed	171 mi./hr.	180 mi./hr.
Low speed	63 mi./hr.	63 mi./hr.
Climb from sea level	1850 ft./min.	2085 ft./min.
Service ceiling	20,350 ft.	24,100 ft.
Absolute ceiling	24,500 ft.	35,400 ft.
Endurance at high speed at 10,000 ft.	2¾ hr.	2 hr.

It is of interest to note that while the original contract for the PW8 ships called for wooden propellers, the spare propellers furnished by the Curtiss Company to the Air Service for these ships will be of the Curtiss Reed metal type.

The above unprecedented characteristics are by no means final. A third ship of this series is now being designed by the Curtiss Company, and it is confidently expected that a high speed of 190 mi./hr. will be realized, using the D12 high compression motor.

Through Going Air Mail Starts

Inauguration of the through going coast to coast Air Mail service started, as scheduled, on July 1.

High officials of the Post Office Department as well as other notables gathered at Curtiss Field, Garden City, L. I., to see the inaugural flight of the new service. Among those present were Senator Seldey P. Spencer of Missouri, Congressman Robert L. Bacon of Long Island, Acting Postmaster General John H. Bartlett, Third Assistant Postmaster General Irving W. Glover, Postmaster Edward M. Morgan of New York, Postmaster Albert Firmin of Brooklyn, Maj. William N. Hensley, commandant of Mitchel Field, Capt. Charles Nungesser, the noted French Ace, and numerous pilots and engineers from Curtiss Field and neighboring airports.

J. E. Whitbeck, superintendent of the Eastern Division of the Air Mail, bidding mail pilot W. L. Smith good-bye on the inaugural flight of the through going air mail service from New York on July 1

Two planes were sent off from Curtiss Field. The first, piloted by Wesley L. Smith, carried 455 lb. of mail, and started at 11:04 a. m. Included in the mail load carried was a letter from President Coolidge to Governor F. W. Richardson of California. The second plane started at 11:22 a. m., piloted by E. Hamilton Lee, senior pilot of the Air Mail Service. This ship carried 250 lb. of mail.

From San Francisco, the western terminus of the service, the first mail plane assigned to the through going service took off the same day at 5:57 a. m. It was piloted by Claire K. Vance and carried among other mail matter a letter addressed to President Coolidge by M. H. De Young, publisher of the San Francisco *Chronicle*, who thanked the Executive for inaugurating a means of bringing the Government closer to the Western public. Postmaster James H. Power and Mrs. Power sent packages of fresh California flowers to President and Mrs. Coolidge.

Both mail loads arrived at their respective destinations in the afternoon of the following day, as scheduled. The eastern mail landed at San Francisco at 5:45 p. m. P. T., and the western mail reached Hempstead, L. I., at 6:11 p. m. E. T.

American World Flight

The American Fliers spent only four days at Calcutta, India, changing their motors, substituting wheels for pontoons and putting on new wings. Lieutenant Smith had the misfortune to slip off his plane and break one of his floating ribs.

On July 1 the planes flew from Calcutta to Allahabad, a distance of 475 mi. in 6 hr. 20 min. On July 2 they flew to Umballa 530 mi. in 5 hr. 20 min. Lieutenant Nelson's plane had a leaky cylinder, but a new one was obtained from Lahore. On July 3 the 325 mi. flight to Multan was made in 4 hr. 20 min. On the Fourth of July the fliers covered the 475 mi. to Karachi, thus crossing the whole of India in four days.

This is the rainy season in India and the Americans have had to contend against bad weather and extreme heat. The British air stations have offered every possible help to the flight and their cooperation has been most useful. Motors are being changed at Karachi, as it was thought that they would deteriorate more rapidly in the extreme heat.

Lisbon to Macao Flight

The Portuguese fliers, Captain Paes and Lieutenant Beiros, virtually completed their Lisbon to Macao flight on June 20 when they passed over Macao and landed at Shamahun, on the frontier of the British new leased territory. In landing the machine was slightly damaged and the fliers were bruised.

Mitchel Field Air Meet

Lieut. Russell L. Maughan, A.S., who returned from his Dawn to Dusk flight on July 3, flying from San Francisco to New York in easy stages, was with his Curtiss pursuit plane the star attraction of the Air Demonstration held at Mitchel Field, L. I., on the Fourth of July. Lieutenant Maughan gave a demonstration of aerial acrobatics toward the close of the meet, giving numerous thrills to the crowd of 25,000 persons who gathered there to see the annual air festival of the Air Service.

About fifty planes of all types and sizes—from the big "Owl" three-engined bomber down to the Sperry Messengers, through the variety of other military planes such as Martin Bombers, MB3A's, DH4B's, etc.—attended the meet, either as participants or as visitors. Among the non-military ships were three planes of the Skywriting Corp. of America, piloted respectively by Captains Collyer, Hearne and Martin; a Potez model 8 sport plane with 70-80 hp. Anzani engine, piloted by Capt. Charles Nungesser, the French ace; a Farman sport plane piloted by Miss Andrée Peyre and a number of Curtiss Orioles and Jennies.

After the Owl had gone up accompanied by two Messengers which kept close behind the big ship's wings, simulating an aerial escort, two five ship formations arose and gave a demonstration of formation flights. One formation, led by Captain Drayton was from the 1st Observation Squadron, while the other, led by Lieutenant Connell, was from the 5th Observation Squadron. Five Martin Bombers then carried out a bombing raid on a dummy village erected on one side of the field, and they were followed by three MB3A's which engaged in aerobatics and fighting maneuvers. Captain Nungesser, who gave a very fine exhibition of landing with a dead stick from a height of 3000 ft., was scheduled to race Miss Peyre in a sport plane contest, but this had to be called off to the great regret of all those who had particularly looked forward to this interesting event. When the French aviatrix landed at Mitchel Field, a Jennie crossed her path and in attempting to avoid her she sideswiped the landing gear of her little Farman "Sport" and damaged one wing.

In her absence the sport plane contest was held between Captain Nungesser, Lieutenants Hutchison and Kinloch, both of the latter flying Messengers. The French pilot won this event in an exciting finish by about 30 yards.

Toward the close of the meet a kite balloon was shot down in flames and two dummies were released in parachutes. Lieut. E. E. Johnson then took up a sister ship of Lieutenant Maughan's plane and thrilled the crowd with up side down flights, while Lieutenant Maughan disported himself in the air to his heart's content, demonstrating the wonderful maneuverability of the Curtiss Pursuit plane.

Busk Memorial Prize

From the income of the Busk Memorial Fund, a sum of Twenty Guineas will be offered as a prize for the best paper received by the Royal Aeronautical Society of Great Britain on some subject of a technical nature in connection with airplanes (including seaplanes).

The prize is open to international competition. The Royal Aeronautical Society retains the right to withhold the prize in any year if it is considered that no paper is of sufficient merit to justify an award.

Intending competitors should send their names to the Secretary of the Royal Aeronautical Society, 7, Albermarle Street, London, W.1. on or before Sept. 30, 1924, with such information in regard to the projected scope of their papers as will enable arrangements to be made for their examination. The closing date for the receipt of papers will be Dec. 31, 1924.

Papers, which must be submitted in either French or English, should in all cases be typed, and a copy should be retained by the author, as the Society can take no responsibility for the loss of copies submitted to it.

Successful papers will become the absolute property of the Society, and will in most instances be published in the Journal of the Royal Aeronautical Society. A signed undertaking must accompany each paper to the effect that publication has not already taken place and that the author will not communicate it elsewhere until the Society's award is published.

The Society attaches special importance to papers showing original work, and due acknowledgment must be made by the author of the sources of any special information.

Edward Teshmaker Busk was the designer of the first inherently stable airplane (the R.E.1.), and was killed in this machine through it catching fire in the air at South Farnborough on Nov. 5, 1914.

The Influence of the Form of a Wooden Beam on its Stiffness and Strength—II

N.A.C.A. Report No. 181

This publication, by J. A. Newlin and G. W. Trayer, is the second of a series of three reports prepared by the Forest Products Laboratory of the Department of Agriculture for publication by the National Advisory Committee for Aeronautics.

The general aim of the investigation described in this report is the achievement of efficient design in wing beams. The purpose of the tests was to determine factors to apply to the usual beam formula in order that the properties of wood based on tests of rectangular sections might be used as a basis of design for beams of any sections and if practical to develop formulas for determining such factors and to verify them by experiment.

Such factors for various sections have been determined from test by comparing properties of the beam in question to similar properties of matched beams 2 by 2 in. in section. Furthermore, formulas were worked out, more or less empirical in character, which check all of these test values remarkably well.

A copy of Report No. 181 may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.

The Application of Propeller Test Data

N.A.C.A. Report No. 186

This report, by Walter S. Diehl, is a study of test data on a family of Durand's propellers (Nos. 3, 7, 11, 82, 113, 139), which is fairly representative of conventional design, prepared for publication by the National Advisory Committee for Aeronautics. The test data are so plotted that the proper pitch and diameters for any given set of conditions are readily obtained. The same data are plotted in other forms which may be used for calculating performance when the ratio of pitch to diameter is known. These new plots supply a means for calculating the performance, at any altitude, of airplanes equipped with normal or supercharged engines.

The coefficients used and the methods of plotting adopted in this report coordinate the results of a few tests into complete families of curves covering the entire range of p/D ordinarily used. This method of analyzing test data enables an investigator to plan tests systematically and leads to useful application of test data.

A copy of Report No. 186 may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.

British World Flight

Maj. Stuart Maclaren and his two companions made good progress during the past week. On June 28 they flew from Rangoon, Burma, to Bangkok, Siam; on the 29th, from there to Haiphong, French Indochina; and on the 30th from Haiphong to Hongkong, China. On July 3 they reached Shanghai, after stopping en route at Foochow; on the 4th they flew across the Eastern Sea to Kagoshima, Japan; and on the 6th they landed at Kushimoto, Japan. On the last named leg of his flight, Maclaren had a forced landing at Susami, 25 mi. from his destination, owing to his fuel supply giving out. A Japanese naval seaplane, however, went to his assistance and transferred enough fuel to the Vulture to enable her to finish the flight.

On July 7 Maclaren landed in Lake Kasumi, near Tokyo.

Practical Value of Refueling Airplanes in Flight

By MAJ. H. H. ARNOLD
Air Service, U. S. Army

Early in 1923, officers stationed at Rockwell Field, Coronado, Calif., after having witnessed the flight of Lieutenants Kelly and Macready on Oct. 4-5, 1922, in which they remained in the air for a period of 35 hr. 18 min., arrived at the conclusion that the limit for sustained flight with airplanes probably had been reached unless some means could be devised whereby gas and oil, and possibly other supplies could be furnished to a plane in the air from other sources. It was believed that if refueling was demonstrated to be feasible, new records could be created and a new field opened up in aviation which might prove of value to the science in general.

Refueling and the Records

When the F.A.I. originated its list of records, it included among others a record for duration in which the time was to be taken when the wheels of the plane left the ground and again taken when the wheels of the airplane touched the ground. Nothing was said or even contemplated at that time—early in 1909—about fuel or supplies being replenished while a plane was in the air. The object of this particular record is clearly understood by any student of aeronautics. It provides an incentive for inventors and designers to produce airplanes capable of the best possible performances. It also supplies a means whereby manufacturers of engines can prove the reliability of their products and planes can be given a thorough service test while in the air, during which test, they will be subject to continual vibration and strain. In addition, pilots, of necessity, are subjected to a constant physical and nervous tension during a continuous flight.

In engine tests for reliability, conditions in the air always have been found to be markedly different from those existing on the ground. An engine when put on the block may stand a test for 50 or 100 hr., but when that same engine is installed in a plane and sent into the air for an endurance test, experience in the past has demonstrated that many things are liable to occur, either to the engine itself or to the accessories upon which the functioning of the engine depends. A failure of these accessories may ultimately cause a forced landing of the plane. Although a 50 or a 100 hr. test of an engine on the block determines to a certain extent the reliability of that engine, it does not determine the reliability of the entire engine installation system on an airplane. So that, whereas the spirit of the F.A.I. requirements for duration flights contemplated improvement in design of plane, increased reliability of engines, and greater power for sustained suspense to pilot and observer, at least two out of three of these factors are met in refueling—the same as in a straight endurance flight.

A Great Endurance Test

It matters little in the final test of an airplane or engine insofar as reliability is concerned whether the plane carries its full amount of gas and oil, or whether this additional gasoline and oil is supplied to it during flight. Obviously, however, the plane used in refueling need not leave the ground with the greatest possible load it can carry. The reliability of the engine under service conditions is proved equally well whether the plane in the air is refueled or whether it carries a full amount of fuel when it leaves the ground.

The nervous strain on the pilot and his assistant is manifestly much greater when they are required to maneuver their plane in order to be in such a position that they can take a long hose dangling in the air and at the same time maintain a course around pylons at which observers are stationed, than if, after once leaving the ground, all they have to do is keep on that same course.

The factors of improvement of design of the plane, while not being met in their entirety by refueling flights, is certainly met in part, in that the plane itself must be able to remain in the air continually during the duration flight and carry an over-load for a greater part of the time. So that while naturally those pioneers who formulated the first requirements for endurance flights could not have foreseen refueling, technically and practically the requirements for endurance flights are met even though planes are serviced in the air.

One phase of the results of refueling which is very remarkable to those who were actually present and actively engaged in refueling flights is that although many so-called experts in aviation have made comments and criticisms on refueling, they have never seen it done and do not know even at this writing just what preparations and training must be given before refueling can be carried out successfully. As an illustration of this, *Les Ailes* of Paris stated, "Refueling amounts to a landing and landings are not allowed, the spirit of the duration record is completely missed." The limited knowledge the writer of that statement had of refueling and how little thought he gave to just what he was saying is obvious to all who have made a study of the matter.

Nervous Strain on Crews

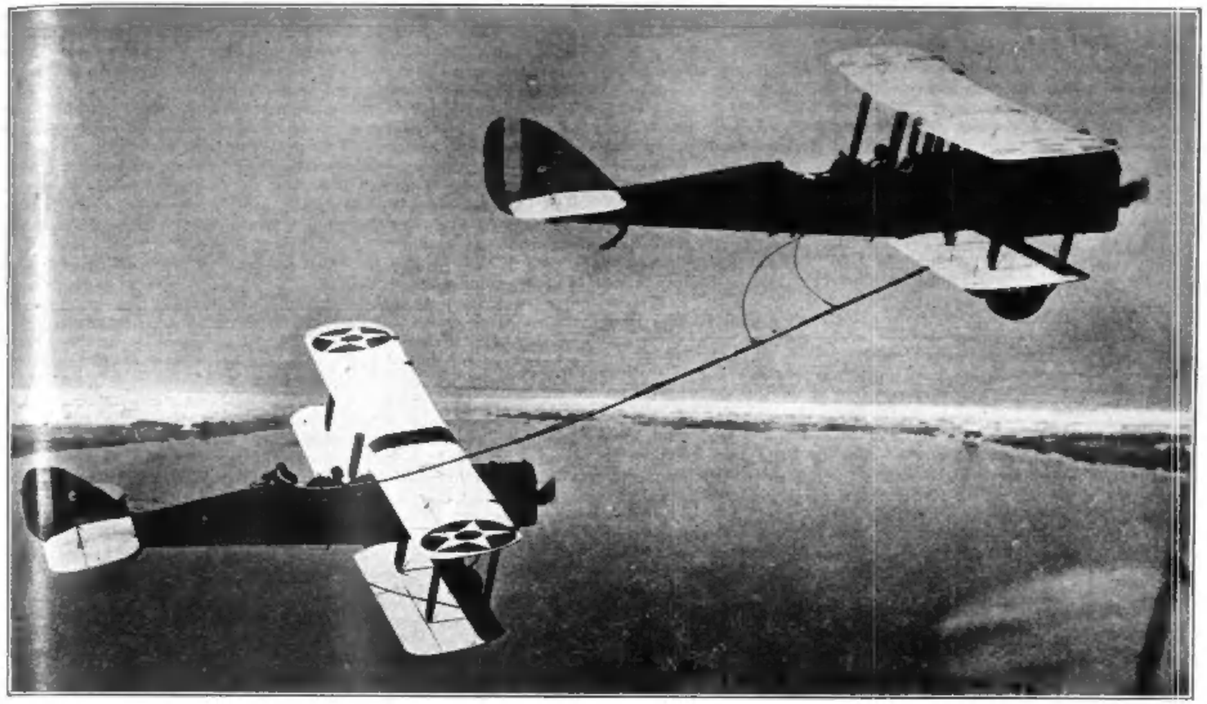
When an airplane makes a landing to be refueled, the engine is idled or stopped completely and the pilot and observer are given a chance to get out of the plane and relax physically and mentally. But how different is the actual refueling! The pilot of the endurance plane sees the refueling ship ahead of him with the hose dangling. He must of necessity increase the speed of his engine to get in a favorable position for the hose-grabber to secure the end of the hose, all of which time the engine itself is undergoing a greater test due to its increased r.p.m. than were it to continue along its normal course around the pylons.

Both pilot and observer of the refueling ship and of the endurance plane are forced to undergo a much greater nervous strain while they maintain their planes in close contact than they would receive in two or three hours of normal flight and yet each actual refueling operation usually lasts less than five minutes.

Future of Refueling

Undoubtedly, the carrying capacity of any type of airplane can be improved with various changes of design up to a certain point, beyond which, no change of design will permit a greater load to be taken off the ground with the same horsepower. This change of design and increase of horsepower in order to permit longer sustained flights has been going on for years: first, the plane being improved and then more power being placed in the plane and thus the pendulum swung back and forth, raising endurance records from less than a minute to the final one made without refueling by Lieutenants Kelly and Macready of 30 hr. 4 min.

Just what material changes will be made in the future in the type and design of engines and planes cannot be foreseen, but it is safe to assume that it will be physically impossible, without a very material change in type and design, to sustain a plane in the air without refueling for a much longer time than the present record of 36 hr., whereas by refueling methods it is at this time possible for a plane to remain in the air until the engine actually wears out through continual use, important parts of the plane give way through vibration, or the pilot and assistant pilot succumb to physical or mental fatigue. That a plane could remain indefinitely in the air was the feat which the officers of Rockwell Field during the year 1923 determined to prove possible and having once demonstrated this new method of sustaining planes in the air, they feel that they have given to the science of aviation something of great benefit and that this advance in aviation should be accepted by the world at large in the spirit in which it was given. The ultimate practical value of refueling is like all other radical developments—yet to be worked out, but certain uses to which it could be put are evident at this time.



How airplanes are refueled in flight—A DH4 of the Army Air Service, used for record purposes, is being refueled over San Diego Bay by another DH4

An attempt is to be made within the next few months to fly a plane from New York to San Francisco between dawn and dark.* During this flight at least five stops will be made to take on gas, oil and water. It is not known at this writing the amount of time scheduled for the landings, supplying the ship and the take-offs, but in all probability the minimum time will be about 30 min. for each stop. It is believed that this is a conservative estimate when, the descent from the cross country flying altitude to the ground, the actual taxiing to the service portion of the airdrome, fueling of the plane, starting of the engine, together with the take-off and climb to cross country flying altitude, are considered.

Transcontinental Possibilities

Five stops of 30 min. each means a loss of two and one-half hours of valuable time which might be required in order for the pilot to reach San Francisco before dark. How much simpler would this flight be if refueling planes were stationed at the five refueling points. The pilot of the plane could continue on his course, receive gas, oil and water, and even a hot meal, and lose no time at all during the operation other than necessitated by a possible decrease of speed to make contact with the refueling plane. A loss of 2½ hr. in a flight such as the one spoken of is a matter of utmost importance and may spell the difference between success and failure.

During the past few years the Armament and Accessory Divisions of Military Aircraft Design Sections have been increasing the load carried in the various types of airplanes until at the present writing they have reached a point where if a bombardment plane, for example, is loaded down with its full complement of guns, ammunition, bombs, equipment and personnel, it has considerable difficulty in leaving the ground, particularly if the airdrome is not very large. The result is that in several maneuvers which have taken place during the past year, various types of bombing and torpedo planes have faced a situation which required them either to leave off part of their equipment or cut down on the gas supply carried in order to permit the planes to leave the ground with the great weight they must carry.

Refueling in this instance is of manifest advantage to the military arms of the service. The plane can be loaded with its full complement of personnel and equipment, but need carry only a small amount of gas. After once leaving the ground and reaching an altitude of a few hundred feet, a refueling plane can service the heavily loaded bombing or torpedo plane so that it will have its tanks full thereby permitting the plane to function to its extreme radius of action.

The above are given as examples of the practical value of refueling now available to aviation. There are probably many more which will become apparent as the years go by. Each improvement in design, performance, or method of taking on gas or oil which increases the efficiency of an airplane is a step toward the ultimate goal when an airplane can be used to fulfill unqualifiedly its mission of transporting a load rapidly from one point to another. Until that time comes it will be hard to convince the average person that airplanes, while having a place in military activities, also have a great commercial value, where they can compete with existing means of transportation insofar as reliability, economy and speed are concerned. Reliability of plane and engine is now being reached, but practically nothing has been accomplished to make flying practical in fog or bad weather. Economy, as viewed by the public, depends upon reliability, speed, and then cost in dollars and cents. The value of the speed of airplanes today is lost in most short trips owing to the distance from landing fields to the heart of cities, and in long trips its value is now decreased when stops are made on account of darkness. However, it does not take much imagination to see in the future an airplane leaving New York with a load of passengers, being refueled and supplied with hot meals at Dayton, Omaha, and possibly Cheyenne, and landing on the West Coast within 24 hr.

*This was written before Lieut. R. L. Maughan's remarkable dawn to dusk flight from coast to coast.—EDITOR.

Airing a Grievance

Editor, AVIATION :—

Commercial aviation has a grievance and we would like to take this opportunity to express this through your columns.

During the last six years, by consistent and conscientious effort, we have educated the newspapers and film companies to the value of speeding up delivery of important news pictures by the use of the airplane. In 1919 and 1920 the newspapers were accustomed to get this service on a small scale on the grounds of publicity and they did not expect to pay for it. It was only after a long struggle that operating companies were able to convince the newspapers and film companies that it was worth while to pay for speed and reliability, even though a certain amount of publicity did accrue to the benefit of the operating company.

By 1923 the business had grown to such proportions that in every event of national importance airplanes were used for transportation in order that the public might get the news pictures with the greatest possible speed.

This business became one of the most lucrative for the smaller operating companies and several went so far as to build and equip special machines so as to furnish the best possible service. Recently the work of the last six years, along these lines, has been partially broken down by the policy adopted by the Air Mail Department of the Post Office. At the time of the death of the late President Harding the Air Mail ran special trips from Washington to Chicago and Boston, competing directly with commercial companies and causing them to lose considerable of this business. During the Republican National Convention in Cleveland the Air Mail service delayed trips east and west so as to pick up pictures of the Convention and carry them to New York and Chicago, again cutting directly into the business of the commercial companies. Several firms saw fit at this time to express their disapproval to the Post Office Department but apparently no attention was paid to their protests for on the first day of the Democratic Convention in New York, the Mail not only delayed their seven forty-five a. m. Cleveland trip until one thirty p. m. but also put on an additional plane from Cleveland to Chicago. Naturally newspapers, when they can send their pictures by Air Mail at the cost of a few cents, will not hire planes from commercial companies and while there are several companies who are in a position to compete with the Air Mail as far as speed, safety and reliability are concerned, they cannot hope to compete in price. The Air Mail can charge nothing but usual postage rates.

The Army and Navy set a good precedent when they published an order forbidding their machines to do aerial photographic work in competition with commercial companies or to carry pictures or films. During the early days after the war, the Army and Navy made a practice of furnishing this service and at that time it was of assistance to the commercial companies rather than a hindrance because it helped educate the public to the practical value of the airplane. However, as the commercial companies became strong enough and reliable enough to handle the business the Army and Navy gracefully withdrew, leaving the field open to the operating companies.

Of course we realize that it is not entirely fair to compare the work of the Army and Navy, which is theoretically purely military, with that of the Air Mail, which is transportation. In any case, no one would consider holding up a fast mail train for eight or ten hours to accommodate several newspapers and there is no special reason why the Air Mail should do it. Certainly it cannot be on the grounds of financial return as the trip from Cleveland to Chicago actually costs the Government $300.00 according to operating figures published by the Air Mail. This amount does not include depreciation, insurance and other charges which commercial companies must figure on. Furthermore, the delivery of some five hundred pounds of letters in Cleveland was delayed several hours because of the postponed trip. Certainly the Mail did not undertake the flight on the grounds of publicity, for while it is too early to determine how much publicity they received on the New York-Chicago flight, it was noted that in the flight from Cleveland to New York, mentioned earlier in this letter, not a single New York paper which used the pictures brought in by Air Mail made mention in their columns of this special service. Furthermore, the Mail has never attempted to establish a publicity department and has sought to avoid publicity when in the opinion of many it would have been advisable for them to have attempted to get a little.

Finally, the news value to any newspaper for the use of airplane is in making a scoop on pictures and it is for this and the publicity of this that the papers and film companies are willing to pay. When the Mail carries pictures or films, any company is entitled to put its material aboard so that they all reach their destination at the same time and consequently there is no particular gain on the part of any one paper.

We have nothing but highest respect for the performance and organization of the Air Mail. The pilots are probably the best in the world, the ground organization is excellent and their record during the past two years is an outstanding performance in aviation. However, the Air Mail has a definite and stated work to do and it is our belief that in pursuing the above described policy it is going outside of its field at the expense of disrupting its schedule with no apparent gain either in money or publicity. In addition to this they are taking business legitimately belonging to airplane operating companies, which at best are having an extremely difficult time to exist under present conditions, and which are, after all, the foundation for a large commercial aviation industry in the United States.

C. S. JONES
Garden City, L. I., June 26, 1924

Amundsen's Flight Off

A recent dispatch to the *Aftenposten* of Christiania, Norway, from Pisa, Italy, states that the airplane factory which constructed the planes for Roald Amundsen's projected North Pole expedition has refused to deliver the ready and tested machines until the balance of £14,000 on the purchase price is paid.

If the explorer is unable to raise the required sum within ten days, the dispatch says, Italy will organize a polar air expedition under the Italian flag, using Amundsen's plan as far as possible and placing the leadership of the expedition under Lieutenant Locatelli, who was to have been one of the pilots of the Norwegian's air expedition.

The dispatch adds that Italy has already engaged five Italian airmen and has offered Amundsen the position of subcommander of the reorganized expedition under Locatelli. The new developments have placed the American members of the Amundsen expedition in an embarrassing position, it is said.

It is declared that Amundsen verified the *Aftenposten's* message rearding his financial difficulties, but stated that he still hoped to raise enough money to get the expedition started. He added that he would refuse to serve in a subordinate capacity to Locatelli.

According to subsequent advice from Italy, Captain Amundsen has declared that the Polar flight will not take place this year as he was unable to overcome the financial difficulties. A last minute effort on the part of Italian air circles to raise the necessary funds by means of a public subscription to make the expedition all-Italian likewise failed, as it was found that this could not be done in time to take advantage of the best weather conditions for the Polar flight.

Among the party assembled at Pisa for the start northward were Lieutenants Riiser-Larson and Dietrichsen of the Royal Norwegian Navy, Lieutenants Locatelli, Italian Air Service, Lieutenant Omdal, R.N.R.; Haakon Hammer, assistant of Amundsen, and Lieutenant Davidson, U. S. Navy.

The planes which are Dornier "Whales" equipped for landing on water, ice or snow were to be flown from Pisa where they were constructed, to Spitzbergen under their own power.

June 3, 1924, was set as the date of departure from Pisa and the following route was to be followed on the northward flight to Spitzbergen: By way of the Rhone River to Zurich, Switzerland, thence by the Rhine to Texel in Holland, from Texel following the coast and the Kiel Canal to Christiania, Sweden, and thence to Bergen, Tromsö and Spitzbergen.

AIRPORTS AND AIRWAYS

Houston News

It is interesting to note about aviation activities at Houston, Tex., that numerous new men are becoming more attached to the sport and business possibilities of the airplane, and are buying planes and learning to pilot them. Out of a lot of five planes delivered by one local dealer this month to individual purchasers, only two were bought by old pilots, while two of the remaining three purchasers had had but a few rides before deciding to purchase a plane of their own.

A. L. Schroeder, dealer, has purchased a lot of J1 Standards, and has moved to more commodious quarters, where he is now engaged in rebuilding same, and converting for the installation of OX5 and Hispano engines. A Jenny has recently been delivered from this shop after overhaul and a J1 Standard is now being prepared for delivery.

W. C. Branum, local realtor and pilot, who operates Rice field, completely washed out a J1 Standard with OX5, in demonstrating the ship. The pilot was taking up a novice, who was being instructed, when the engine stopped at an altitude of about 75 ft. and the ship side slipped to the ground. Outside of a severe shaking up of the two occupants and the complete demolishing of the ship which was the pride of the field no damage was done.

Howard C. Wilcox, dealer here, has delivered four OX5 Standards and one Hispano Standard. Three of these planes went to purchasers who are now being instructed in piloting them. The Hisso Standard is going to "Up-side-down" Pangborn of the Gates Flying Circus.

The many friends of Fred Lund who came to Houston in his Lincoln Standard from the West Coast last fall will regret to learn that his war-time injury has caused the Veteran's Bureau to order him to the Hospital at Kerrville, Tex. Mr. Lund, it will be remembered, came into considerable notoriety recently during a flying circus at Ellington Field, when he rescued a local chorus beauty after her parachute had fouled the plane she was jumping from.

C. C. Cannan has completed removal of his hangar to his new location in the Bellair Race track. Mr. Cannan has now in active operation four Standards in connection with his oil field and shock-absorber activities.

R. W. Mackie, a local pilot who is probably one of the oldest in line of experience operating in this vicinity, has just completed instruction of a class of five men, three of whom have just soloed their first time. Bert Pideoke has a class of two under instruction and Ernest Petteway also has a class of two, all operating from Rice Field.

W. H. Pennington has just completed construction of a 5 passenger air sedan in which he will install a Salmson engine. Each side of fuselage passenger compartment has three 14 in. by 14 in. windows that provide ample ventilation, and in the rear is a large baggage compartment. The engine section is quickly demountable, making it very easy to change engines. The tail skid is connected with the rudder bar. Further details will be supplied at a later date.

Monmouth News

By Ralph B. Eckley

One hundred and ten people were carried by Pilot John Livingston on Friday afternoon, June 20, in just 3½ hr., the flights averaging 6 min. in length. The rides were a feature event staged by the Mid-West Airways Corp. and a special rate was given, the only requirement being that the person riding must never have taken an airplane ride before.

Tickets for this feature were placed on sale Thursday morning and were all sold in less than an hour. Hundreds of spectators gathered at the field to watch the lucky purchasers, who secured one of the limited number of tickets, take their first hop-off.

The Breguet plane, equipped with a Renault motor, proved its durability in the flights. The motor was not shut off from three o'clock to half past six and the plane made twenty-five take-offs and landings. Each trip was made with a load of from four to six passengers and included a swing over the city of Monmouth.

* * *

The Mid-West Airways Corp. is furnishing planes for the Venard Film Corp., of Peoria, Ill., which is taking air maps and pictures in Peoria, Kewanee and other central Illinois towns. The pictures are taken from the Curtiss motored Standard, rebuilt at the local field, by Hugh Englebrecht, representative of the film company.

* * *

Among the students who are to complete flying courses at the local field within the next few days is Karal Straubmuller, who is here from Colon, Panama. He will leave again for the Canal Zone on July 7, after completing his course under Pilot John Livingston. Straubmuller came to this country from Berlin, Germany, in 1921. He had three years experience in the mechanics air service in Berlin before coming here and after a few months in New York, enlisted in the U. S. Army and was detailed to France Field. He took advantage of a sixty days furlough to learn to fly and to study English and Mathematics.

* * *

Numerous circulars and leaflets, in addition to newspaper advertising, have been used by the Mid-West Airways Corp. to sell airplane transportation to the public. Rate cards, with twenty different distance zones up to 200 mi., have been widely distributed. They contain rates for three types of ships, single passenger, two passenger, and four passenger. Special round trip rates are also provided. In the newspaper advertising a 40 mi. trip to the Mississippi river and return without stop, for four passengers in the Breguet plane has been stressed, with profitable returns for the company.

McAlester, Okla., has Field

McAlester, Okla., like her sister city, Muskogee, extends a most cordial invitation to all transient fliers.

A new flying field designated "Legion Field" has just been opened in the southeast outskirts of the city. It has been cleared and much to improve the general condition of the field had been brought about through the local chapter of the Officers' Reserve Corps. The field is a mile long, running north and south and is well drained. A street car line is only two blocks from this field. The city restaurant men give a 10 per cent reduction in their line to all fliers, also free passes are given to the local shows. Hotel accommodations may be obtained at the same reduction.

A field was formerly available on the State Penitentiary grounds, but this is no longer in condition for use and should not be confused with the above mentioned.

Iola (Kans.) News

Iola, Kan., has a 90 acre flying field one mile east and one mile north of the town. It is easy to get into, but attention should be paid to the telephone line on south side of the field. High test gas and oil are available.

B. T. Barber is operating his Laird off this field and Phil. A. Wachtell is doing commercial flying. Clarence Clark, a local pilot, is assembling an SS4 for Royal Geery. Harry B. Crewdson is operating a Lincoln Tourabout in passenger work on this field, and Frank McCarthy is getting his air flivver ready to put it into operation. Mark S. Revard has sold his Jennie to James Devine of Tulsa, Okla., and B. T. Barber has sold his JN4D to Ed Gunn of Wichita.

The season looks good. Passenger ships are operating at $2.50 per passenger.

Wright T3 Engine Passes Rigid Duration Test

The Wright Model T3 high compression engine recently completed a standard Navy Fifty Hour Test, developing the highest mean effective pressure that has ever been recorded on such a run. Moreover, this is the lightest engine for the power developed in the world, weighing 1.7 lb. per developed horsepower on test. Not only did this engine finish the run with 5 hr. developing 680 hp. at 2000 r.p.m., but it showed remarkably low average fuel and oil consumptions, the fuel consumption on the nine-tenths run being 0.47 per hp. hr. and the average oil consumption for the entire run being 0.0065 lb. per hp. hr.

The engine was taken from the production run of T3 engines now going through the plant for the Navy, and after its regular test runs covering a period of 16 hr., power curve runs were made to determine the characteristics of the engine and it was then put on a fifty hour test with the rated power of 650 hp. at 2000 r.p.m.

The standard Navy tests consist of ten 5 hr. periods, nine of which are run with the first 4½ hr. at 9/10ths rated power at the rated speed, with ½ hr. at the end of each period at the rated power and speed. The tenth, or last 5 hr., is run with throttles wide open at the rated speed.

Instead of running in the usual manner, with the power corrected for the temperature and barometer, this run was made with the engine developing the power required by the Navy test uncorrected, which was considerably more severe than is required, as the engine developed from 10 to 15 more horsepower throughout the test than was necessary. The whole run was made in 60 hr. elapsed time, there being only two stops, one at the end of 20 hr. to replace a defective oil line, and another toward the end of the run to replace defective spark plugs. Considering that this was a high compression engine, with 6:5 : 1 ratio, running at 2000 r.p.m., this was a remarkable test.

The averages for the test are given in the following table:

RESULTS OF 50 HOUR TEST OF WRIGHT T3 ENGINE

Averages	Cor. hp. 2000 r.p.m.	Fuel Cons. lb. /hp. /hr.
9/10 power running	602	0.470
Rated power running	670	0.528
Last 5 hr. running	680	0.548
M.E.P. developed on last 5 hr.		138½ lb.
Oil consumption for 50 hr.		0065 lb. /hp. /hr.
Weight of engine, dry		1155 lb.
Weight per horsepower		1.70 lb.

A disassembly inspection of the engine showed that all the major parts were in excellent condition, so much so, that the engine was built up again and put on another test for experimental purposes.

The successful completion of this test, in addition to the remarkable racing records of the experimental models of this engine developing 750 hp. at 2200 r.p.m., show that this powerplant is really capable of being used in two entirely different kinds of service, that is, in pursuit and observation planes, as well as large bombers and flying boats. In the high speed service, the tremendous power available, together with the low weight per horsepower and small frontal area of the engine, make it particularly desirable. For the large ships particularly, its low fuel and oil consumptions, coupled with its durability, make it particularly satisfactory.

Dayton News

By Maurice C. Hutton

Eight local reserve officers went into training at Wilbur Wright Field June 15 with the 464th and 465th Pursuit Squadrons which are composed of citizens from the Fifth Army Corps Area. They are: Lieutenants Mac Short, Harold S. Beymer, Fred W. Herman, Harold A. Iaass, Elbert Sohm, Byron H. Lytle, Roy E. Mikesell and Grover C. Cotner.

The training period will last for two weeks and be under direction of Maj. J. H. Rudolph, engineer officer at Fairfield. The camp will be in command of Maj. E. L. Hoffman.

* * *

Orders for twenty-six Delco-Light plants, manufactured in Dayton, have been placed by the Air Mail Service for installation along additional 300 mi. stretches at both ends of the night route between Chicago, Ill., and Cheyenne, Wyo.

The local concern also furnished the plants which light beacons along the original 1,000 mi. night airways. The route has been extended to guard against the possibility of delayed planes being caught in the descending darkness before reaching the lighted zone.

* * *

Ruth Law was a visitor in Dayton and McCook Field last week. She was enroute to New York with her husband to see Glenn Curtiss in regards plans for a helicopter which she has drawn.

* * *

Wilbur Wright Field dispatched a "Shriners' Special" to the national convention at Kansas City. It consisted of a Martin bomber piloted by Lieut. Harry Mills and a De Haviland flown by Lieut. George V. McPike. Others who made the trip were Maj. J. H. Rudolph, and J. D. Ridlet and Gregg Haddon, civilian employees.

* * *

Due to increased traffic over the model airway, the airway office at McCook Field has been enlarged and improved. Another story has been added and such conveniences as dressing, express and waiting rooms installed. A large map of the United States has been prepared for the operations office on which weather conditions all over the country will be shown.

* * *

En route to Chicago, Lieuts. "Al" Williams and David Rittenhouse, winners of the 1923 Pulitzer and Schneider cup races respectively, passed through Dayton last week. On their return they attended a meeting of the Dayton chapter, N.A.A.

Chicago News

By R. W. Schroeder

Mr. Heath has been suddenly called to California due to the death of his step father.

Ambroz & Oakes have purchased a Jennie from Gus Palmquist. Ed. LaParle is piloting the ship for the present, and Sunday flew over to Stanley Wallace's field on River Road to take passengers, as a big picnic was to come off across the road from the field. In spite of the dense fog that hung over the country all day, Ed. carried over twenty passengers, several times getting lost within 200 ft. of the ground. At the Heath airport they carried only one passenger that day, and at Ashburn I understand they carried two.

Saturday Julian Farwell flew to Kenosha over the week-end to carry passengers.

Chris. Lund of the Lund Coal Co., who operate a couple of Lincoln Standard SE5's, expect four more ships this week. They have erected a fine wooden hangar and are evidently here to stay. They operate from a field on Higgins Road just this side of the Des Plaines River.

E. A. Sperry Offers Trophy

As a fitting tribute to the memory of his son, the late Lawrence Sperry, noted figure in the aeronautical world, Elmer A. Sperry has offered a trophy to be competed for annually in the International Air Races.

The memorial will be known as the "Lawrence Sperry Trophy" and will be donated by members of the Sperry family. It is probable that the reward will be offered in an event for light commercial airplanes in which Lawrence Sperry was so interested.

Mr. Sperry discussed plans for the trophy with Frederick B. Patterson, president of the N.A.A., while in Dayton recently.

Lawrence Sperry was drowned in the English Channel last fall while attempting a flight in his "Sperry Messenger" plane from London to Holland. As a preventative against the recurrence of such accidents, his father has designed a pneumatic device to keep the tail of an airplane afloat during forced landings in water.

St. Joseph Wants New Airport

Securing of a large municipal air field is one of the projects being undertaken by the N.A.A. Chapter in St. Joseph, Mo. It is planned that the field will be a strictly municipal affair, fostered and carried on by the city.

The present field used by St. Joseph air enthusiasts is about 5½ mi. from the city, whereas the proposed new field will be within two miles of the business center.

Aerial Fox and Hound Race

As far as known, the first aerial fox and hound race to be held in this country took place at Detroit, Sunday, June 22. In this kind of event—which the French call a "balloon rally" and the English a "Gymkhana"—the balloons represent the foxes and automobiles the hounds.

The event was won by the balloon "Detroit," piloted by Herbert V. Thaden and William Naylor. Thaden, by skillful maneuvering and careful landing, brought the gas bag down within 1.9 mi. of the spot assigned to him as his destination, which feat was regarded as exceptionally clever because of the heavy winds blowing at the ground. He landed about two miles northeast of Marine City. Jack Boettner and Walter Morton, piloting the "Goodyear II," entered by the Goodyear Tire & Rubber Co. of Akron, Ohio, were second, landing near Mt. Clemens, 14 mi. from Starville, on the shore of Anchor Bay. They preferred to land before crossing the bay because of the slow-moving east wind which they would have had to use in crossing. Members of their party were due to return to Detroit at an early hour, and this influenced their landing.

Raffe Emerson and Svend A. U. Rassmussen, piloting the "Bi-Ball" were third in the contest. They landed near Warren, Mich., 23 mi. from their destination.

Before the race, the pilots were given maps, and were instructed by Ralph Upson, the referee, to mark the spots at which they thought they would land. These maps then were folded and placed in sealed envelopes, and pilots were allowed to draw. In this race, none of them drew the same map he had marked.

From the time the first balloon left the ground in front of the Highland Park plant of the Ford Motor company, until the last "hound" had given up the chase and started home the race was exciting and interesting. It was exciting not because the automobilists who were "hounds" had to drive at break-neck speed to pursue the balloons, because all three balloons were high aloft at times, and moving very slowly. One man, driving a new car, never exceeded 20 mi./hr. and arrived at the landing place of balloon No. 2 a few seconds after the first three reached the basket.

All the locations picked were feasible ones; in fact judging from the assortment of currents found by the contestants, any position could have been reached within an angle of 10 deg. W. of N. to 120 deg. E. of N. Boettner could have easily got nearer to his destination, but the currents going in that direction were slow and one of his guests had to get back to an appointment. Lieutenant Emerson carried too many passengers and lacked ballast to maneuver with.

The Weather Bureau through Norman B. Conger, local chief, gave special service for the event.

There were no automobile accidents reported along the route of the chase at the time it was under way, although the usual average of Sunday accidents occurred at other places and times.

"The success of this first venture in lighter-than-air races in Detroit has been so marked that it deserves annual repetition," said William B. Stout, of the Stout-Metal Airplane Co., when full returns from the race had come in.

"I believe the race should be made an annual affair, and better still, should be made international in scope with a view of taking the place of the Gordon Bennet race, which reached its conclusion this year when Demuyter, the Belgian, won the cup for good. Some Detroit agency, preferably a newspaper, should offer a trophy for a balloon race, and make the race as big and as important as the Gordon Bennet races have always been."

O. Wright Heads Contest Committee

Orville Wright was appointed chairman of the Contest Committee of the National Aeronautic Association, succeeding Col. F. P. Lahm, last week at a meeting of the executive committee held at Dayton under the chairmanship of Frederick B. Patterson, president. Colonel Lahm has resigned since being transferred to the Pacific coast with the Army Air Service where he will be out of touch with national headquarters of the N.A.A.

Mr. Wright, who is taking an active part in preparation for the International Air Races to be held at Dayton Oct. 2, 3 and 4, will now be in charge of the principal aeronautical contests held in America and of the authentication of American heavier-than-air and lighter-than-air records.

The executive committee unanimously indorsed in a resolution the leadership of Mr. Patterson, who has been at the head of the N.A.A. for nine months. It also heartily approved the national membership drive being carried on by Rear Admiral W. F. Fullam, retired.

The N.A.A. officials were keenly interested in developments in connection with the Pulitzer high speed race and the allied events. After hearing a report of the plans by Hugh W. Robertson, assistant manager, they expressed the opinion that the meet will be an outstanding success. Telegrams were sent by the committee to Postmaster General Harry S. New and Assistant Postmaster General Paul Henderson congratulating them on inauguration of the New York to San Francisco air mail service.

Those who attended the session were Mr. Patterson, Ralph W. Cram, Mr. Wright, W. P. MacCracken, Jr., chairman of the legislative committee, Admiral Fullam, John Ahlers, Elmer E. Sperry, Brooklyn; C. T. Ludington, Philadelphia; Glenn L. Martin, Cleveland; Howard E. Coffin, Detroit, and Edgar Tobin, of San Antonio, Tex.

Visiting Newspaper Men Enjoy Flights

Visiting newspaper men covering the Democratic Convention were recently entertained by the Aviation Committee of the Newspaper Club of New York, of which Henry A. Bruno is chairman.

On Tuesday June 24 the visitors received a welcome from the skies. Two squadrons of Army airplanes from Mitchel Field and several planes from the National Guard Air Service and Naval Reserve circled above Madison Square Garden at 9.45 a. m. Included in the fleet were three Curtiss Orioles under the command of C. S. Jones, manager of the Curtiss Exhibition Co. At 8.30 p. m. the Shenandoah also circled above the Garden extending the Navy's greeting to the Convention.

On Saturday June 28 a large party of visiting newspaper men went aboard Barron G. Collier's yacht "Florida" at 79th Street and proceeded to the National Guard Air Meet at Miller Field, Staten Island. The yacht was escorted by the Shenandoah under instructions from Rear Admiral Moffett, Chief of Naval Aviation. The admiral also ordered several naval planes to accompany the party to Miller Field.

Many of the guests expressed a desire to fly and arrangements were made to give them air rides from Curtiss Field on Sunday. A fleet of five planes were assembled at Garden City among them being Curtiss Orioles and Standards and the new Fairchild Huff-Daland camera plane. Thirty-five guests went for the sightseeing flights. The women correspondents were in the majority.

A Record for Passenger Carrying

One of the largest crowds ever attracted by flying exhibitions in the Middle West was assembled at the flying field at Lincoln, Nebr., on May 25 to watch the performance of the Lincoln Standard Aircraft Corp. planes assisted by five Army DeHavilands from Ft. Riley, Kans. The program of the afternoon was made up of airplane races, parachute jumping and special stunt work.

A record for passenger carrying was undoubtedly made during the afternoon when three Lincoln Standard planes carried 408 people. The afternoon receipts totalled $1194.00, making a total of 398 pay passengers carried at $3.00 per head, ten guards riding during the afternoon as free passengers. Bob Cochrane of Casper, Wyo., flying a new Lincoln Standard five-place plane carried 184 people. Earl Barnes, flying another Lincoln Standard five-place plane, carried 169. Chauncey Young of Lincoln, Nebr, flying a Lincoln Standard Tourabout carried 55, but was laid up over an hour during the afternoon with a broken shock absorber.

At no time during the afternoon was there a lull in obtaining passengers and the popularity of the LS5 as a passenger carrier was clearly demonstrated. The new $3.00 passenger price for five minute rides seemed very popular as in a number of instances the same passenger remained in the ship on landing and rode as often as four times in succession.

UNITED STATES AIR FORCES

U. S. ARMY AIR SERVICE

Army Air Orders

Sec. Lieut. Edmund C. Lynch, A.S., from Advanced Flying School, Kelly Field, to Brooks Field, Tex.

First Lieut. Joseph T. Morris, A.S. Chanute Field, effective upon completion temporary duty Mitchell Field, at Hampton, Va.

Lieut. Col. Harry Clay Fry, Jr. A.S. Of. Res. Corps, ordered to active duty from Pittsburgh to O.C.A.S., Washington, for ten days, proceeding at expiration of that time to industrial war plans representative, Buffalo. Lieutenant Colonel Fry to be relieved in time to arrive home June 23, when he will revert to inactive status.

First Lieut. Howard C. Brandt, A.S., Signal School, Camp Alfred Vail, upon completion of temporary duty at Mitchell Field, to Chanute Field.

Order April 26, relieving First Lieut. Louis N. Eller, A.S. from duty at Tech. School, Rantoul, Ill., and assigning him to Chanute Field, revoked. Lieutenant Eller, Chanute Field, to Boston, for ten days temporary duty, at the expiration to Hartford.

First Lieut James M. Gillespie, Ord. Dept., Kelly Field, to Air Service Primary Flying School, Brooks Field.

Appointment of Sergt. Henry H. Ogden as Sec. Lieut. A.S. is announced.

First Lieut. Albert B. Pitts, A.S., A.S. Tech. School, Chanute Field, to Rockwell Field.

Capt. William E. Lynd, A.S., A.S. Tech. School, Langley Field, to field duty Kelly Field.

Maj. Herbert A. Dargue, A.S., Bolling Field, upon completion of temporary duty Mitchel Field, to O.C.A.S., Washington.

First Lieut. John A. Kase, A.S., Air Interm. Dep., Middletown, Pa. to Langley Field.

Order April 5, granting First Lieut. Cornelius E. O'Connor, A.S., leave of one month fifteen days, June 12, revoked.

Order May 27 assigning First Lieut. Joseph T. Morris, A.S. to Langley Field, revoked.

First Lieut. Ernest W. Dichman, A.S., McCook Field, Dayton, to 22nd Squad. Ob., Maxwell Field, for temporary duty, upon its completion to proceed to Kelly Field.

Maj. Barton K. Yount, A.S., O.C.A.S., Washington, to A.S. Eng. School, McCook Field, Dayton.

Tech. Serg. John F. Brown, A.S. Tech. School, Langley Field, retired.

Orders April 29, Sec. Lieut. Richard Briggs Evans, A.S. amended to read: Transfer of Lieutenant Briggs, A.S. to Cav. April 24, with rank June 12. Lieutenant Briggs relieved from present duty Brooks Field, assigned to 12th Cav., Fort Ringold, Tex.

Maj. Lewis H. Brereton, A.S., Kelly Field, upon expiration of leave to Langley Field.

Capt. Wolcott P. Hayes, A.S. upon completion of instruction at Tech. School, Chanute Field, to Commanding Officer.

Second Lieut. Bernard Henry Sullivan, A.S., Brooks Field, transferred to Coast Art. Corps., sailing from San Francisco July 22, for Canal Zone.

First Lieut. Samuel C. Skemp, A.S. upon completion of instruction at Tech. School, Chanute Field, to Commanding Officer.

Capt. Lawrence F. Stone, A.S., Prim. Fly. School, Brooks Field, to the Adv. Fly. School, Kelly Field.

First Lieut. Philip Schneeberger, A.S., Prim. Fly. School, Brooks Field, to the Adv. Fly. School, Kelly Field.

First Lieut. Richard H. Magee, A.S., air Inter. Dep., Little Rock, to 5th Comp. Group, sailing from San Francisco, July 2nd, for Honolulu.

Sec. Lieut. Walter Howard de Lange, A.S., Kelly Field, transferred to Field Art., Second Div., Fort Sam Houston.

Sec. Lieut. Samuel P. Mills, A.S., McCook Field, after temporary duty Mitchel Field, to New York City, sailing Sept. 26 for Manila, P. I.

First Lieut. James R. Manees, A.S. (Inf.), Brooks Field, to Second Div., Fort Sam Houston.

Sec. Lieut. James P. Catte, A.S. (Inf), Brooks Field, to Second Div., Fort Sam Houston.

First Lieut. Robert S. Moore, A.S. (Inf.), Brooks Field, to 13th Int., Fort Worth.

Order March 1, assigning First Lieut. John Y. York, Jr., A.S., Scott Field, amended to assign him to Prim. Fly. School, Brooks Field.

Following named officers A.S. relieved from duty A.S. Tech. School, Chanute Field, upon completion of course of instruction, and assigned to stations named: First Lieut. Malcolm N. Stewart, Wilbur Wright Field, First Lieut. William B. Souza, Kelly Field, First Lieut. Thomas L. Gilbert, Post Field, First Lieut. William J. Flood, Scott Field, First Lieut. Sam L. Ellis, Chanute Field, for temporory duty, proceeding to Selfridge Field.

Obituary Notices

NOBLE P. BEASLEY—Born Oct. 29, 1898, Hiwassee, Ark. Cadet, Military Academy, 1919; second lieutenant, A.S., 1923.

He was on duty at A.S. Primary Flying School, Brooks Field, Tex., from Sept. 12, 1923, to Apr. 7, 1924; at Advanced Flying School, Kelly Field, Tex., to May 29, 1924, where he died in an airplane accident at Kelly Field.

JAMES M. G. T. NEELY—Born Oct. 18, 1894, Louisville, Ky. Private, Signal Corps, Oct. 30, 1917; second lieutenant, Av. Sec. S. C., Feb. 12, 1918; first lieutenant, A.S., July 1, 1920.

He was on duty at Ft. Omaha, Nebr., from Feb. 13, 1918, to Apr. 10, 1920; at Ft. Winfield Scott, Calif., to May 8, 1920; at Camp Lewis, Wash., to Sept. 26, 1920; at Ft. Winfield Scott to Apr. 20, 1921; at Ross Field, Calif., to Nov. 19, 1922; at Scott Field, Ill., to June 2, 1924, when he died at Monticello, Ill., in a balloon accident.

STEWART L. THOMPSON—Born Apr. 29, 1899, Watertown, N. Y. Cadet, Military Academy, 1919; second lieutenant A.S., June 12, 1923.

He was on duty at Primary Flying School, Brooks Field, Tex., from Sept. 12, 1923, to March 19, 1924; at Advanced Flying School, Kelly Field, Tex., to June 5, 1924, when he died in an airplane accident.

Lieutenant Thompson was piloting one of a formation of three ships, when he started to change places with another plane and collided with it at an altitude of 1300 ft. The two ships fell with wings interlocked, but Lieut. W. W. White, pilot of the other ship managed to leave the wreckage in a parachute and made a safe landing. Lieutenant Thompson who is believed to have been stunned by the collision, was killed in the fall.

Night Flying at Langley Field

The schedule of night flying of the 2nd Bombardment Group at Langley Field, Va., has created a lot of interest among the personnel. Take-offs and landings are made upon signal from the ground and with the aid of searchlights and auxiliary lights.

Besides instructions in night flying, ships are flying in the vicinity of Fortress Monroe to give the anti-aircraft searchlight battery at that place an opportunity to test the lights, listening apparatus, and assisting the training of personnel. The future schedule of the night flying in the Bombing Group will be two nights a week for training and bombing practice.

Maughan Receives Congratulations

Lieut. Russell L. Maughan, A.S. received a great many congratulatory messages upon his successful completion of the dawn to dusk flight from coast to coast. Those sent by President Coolidge, Secretary of War Weeks and General Patrick read as follows:

"I am glad to extend to you my most cordial congratulations. Your flight is an achievement of which every American is proud and marks a real advance in practical aviation."

CALVIN COOLIDGE

"The Army is proud of you and the latest record you have added to its achievements. Your flight of yesterday is not only a triumph of science, but of personal courage and skill. I extend to you my own congratulations, as well as the thanks of the War Department."

JOHN W. WEEKS

"Congratulations on the achievement of a wonderful feat. You have fulfilled every confidence I had in you. Your success proves the full value of careful preparation, efficient organization and excellent physical condition and qualities of endurance. You have brought prestige to yourself and to the Army Air Service. Your flight is a history-making event which more than ever demonstrates the possibilities of the airplane as an annihilator of time and distance. Not only from a military viewpoint but from a commercial viewpoint, your flight is epochal. I am proud of you."

PATRICK

Commenting on the dawn to dusk flight General Patrick said: "Spanning the continent within the daylight hours of one day has brought once more to the Army Air Service and to American aviation the pride and satisfaction of knowing that our personnel and equipment, though limited, are leading the world in performance. We are justly proud of Lieutenant Maughan whose skill and high sense of duty made this flight possible.

"From a military standpoint, this flight means much. It demonstrates the possibility of moving our Air Service units, stationed in the interior, to a threatened point on either coast in the event of a sudden emergency.

"From a commercial standpoint, the high stage of development which aircraft and aviation engines have reached to make possible the covering in hours of a distance which normally takes days to traverse will be readily recognized.

"Lieutenant Maughan's accomplishment of yesterday is more than a feat of skill and endurance. It is a demonstration of the use which may be made of aircraft as a practical factor in commerce. Papers printed in New York yesterday, carried on this trip, were read in San Francisco in the evening of the same day.

"Lieutenant Maughan, in general, followed the route over which the daily aerial mail service is operating. The year 1924 has shown that aircraft may soon be called upon to take over a portion of the great burden of transportation now overtaxing present facilities."

Speaking of Aileron Wires

Finding himself at an altitude of but 250 ft. with the aileron control of his plane gone was the disagreeable experience of Sec. Lieut. Benjamin W. Chidlaw, A.S., 41st School Squadron, Kelly Field. Lieutenant Chidlaw with Captain Hart, Medical Corps, who is a student officer, were making a short training flight and were in a glide preparatory to landing when the nose of the plane commenced to drop. It developed that the aileron control wires of his plane snapped at the quadrant, and it left him descending to terra firma at a terrific speed with no lateral control of his plane.

When the nose of the plane first dropped they were at an altitude of about 250 ft., and with the limited time left the pilot to right his craft before striking the ground it took considerable effort and a splendid exhibition of his skill to set it down with the elevators without serious injury to either of them. Unfortunately, Captain Hart suffered a broken nose in the fall.

A similar experience recently befell Capt. Vernon L. Burge, A.S., commanding officer of Kindly Field, Fort Miles, P. I., while on a ferry trip to Manila. When just off Port Area at 1,500 ft. altitude the aileron wire broke. The seaplane was placed in a gentle glide and very luckily remained absolutely level laterally, which speaks well for the stability of the boat. Inasmuch as a strong wind was blowing at the time it was feared that a wing would drop and a serious crash result. After a safe landing was made a new wire was installed and the ship flown home. The passenger, an Artillery captain on his first airplane ride, crawled out of the ship and thanked the pilot profusely for the wonderful ride, etc. He was not enlightened, however, as to the nearness of an accident. Where ignorance is bliss 'tis folly to be wise.

The occurrence of two such mishaps at short intervals from each other emphasizes the importance of careful maintenance work. It is good practice to give all controls and their connections a periodical inspection and to work the controls, *before* taking off, a bit roughly to see whether the cables hold.

Air Mail for Troops on the March

The 10th Infantry and the 3rd Field Artillery from Fort Benjamin Harrison, Indianapolis, Ind., recently traveled from their home station to Camp Knox, Ky. The troops were en route for two weeks. During this period mail was delivered to them by airplane each day, the pilots being the officers and non-commissioned officers attached to the 88th Squadron stationed at Wilbur Wright Field, Fairfield, Ohio. Twelve trips in all were made for the special purpose of delivering mail to the troops while enroute.

Martin Bombers Arrive in Philippines

An Army transport recently brought ten Martin Bombers to the Philippine Department. This type of plane is entirely new to the Islands and much interest was evidenced by both officers and enlisted men in its operation. Airplane Inspector James L. Kelley was sent to the Philippines to supervise the setting up of these planes. Lieut. P. E. Skanse had the honor of flying one of these bombers on its trial flight. This officer has had much experience as a bombing pilot at Langley Field.

Change of Station

The 3rd Division Air Service, less the 33d Air Intelligence Section, has been transferred from Crissy Field, Calif. to Rockwell Field, Calif.

U. S. NAVAL AVIATION

Enrollment of Naval Reserve Fliers

The enrollment of new members of the Naval Reserve Flying Corps for flight training will be made in Class 6 in the rating of seamen second class. The age limits for such enrollment shall be from 18 to 28 years.

Officers and men of the Naval Reserve Force holding ranks or ratings above seamen 2nd class, who apply and qualify for flight training will be discharged from their present enrollments, and will be reenrolled in Class 6 as Seamen 2nd class.

If physically qualified, upon the successful completion of the ground school course and the elementary flight training,

CALENDAR OF AERONAUTICAL EVENTS

March 25.	Start of the British World Flight, Southampton, England.
April 6.	Start of World Flight of the U. S. Army Air Service, Seattle.
August.	"Tour de France des Avionnettes." International Round-France race for light airplanes.
Oct. 2-4.	International Air Races, incl. Pulitzer Trophy Race, Dayton, Ohio.
Oct. 24-25.	Schneider Cup Race, Baltimore.
Dec. 17.	Twenty-first anniversary of the first successful airplane flight.

men who are recommended by the Commandant will be ordered to a service unit of the Aeronautic organization of the Navy for a period of at least forty-five days for observation and further training in service type planes under actual service conditions. Those who do not successfully complete the ground school course and the elementary flight training, or who are found not physically qualified will be given special order discharges from the Naval Reserve Force, under honorable conditions, if entitled to same.

Upon the completion of the prescribed period of training in a regular service unit, if recommended by the Commanding Officer of that unit and the Commandant of his Naval District, the student will be commissioned an Ensign (confirmed), Class 5, U.S.N.R.F., provided he has had at least three months active service and will be designated as Naval Aviator (Reserve Force.) Men who enroll as seamen second class and qualify for commission as Ensign before reaching the age of 21 years shall be commissioned.

Officers of Class 5 will not be reenrolled after reaching the age of 36 years, nor will they be reenrolled if they have failed to perform at least 15 hr. of flight service each year of their enrollment, unless the lack of facilities or other causes beyond their control have made it impossible for such flights to be performed. Officers will not be reenrolled in, or transferred to, Class 5 unless they are qualified Naval Aviators.

Physical requirements for enrollment or reenrollment of members of the Naval Reserve Force for aviation duties shall be the same as prescribed for aviation personnel of the regular Navy. A man who completes the course of instruction and is recommended for commission as Ensign shall be examined by a board of medical officers, at least one member of which is a Flight Surgeon to determine his qualifications for aviation duty in time of war.

HS2L Does some Climbing

Some people say that an HS2L flying boat will not climb to any altitude over a thousand feet or so. To disprove this Lieutenant Burgess of Kindley Field, Fort Mills, P. I., ascended to 8,500 ft. in old No. 253, while Captain Burge bettered this record by going up to 10,000 ft. in No. 228. While the rate of climb was slow, still they got there. Imagine using two hours in a DH to climb 10,000 ft.

A Suggested National Air Policy

That a National Aviation Policy is needed by the United States is obvious. To get such a policy in concrete form AVIATION *requested several thoughtful friends of aeronautical progress to make suggestive and constructive recommendations. Some of them are given below and will be printed each week with additions, omissions and such other changes as appear to be helpful toward the formulation of a sound national air policy. Readers of* AVIATION *and others can render no greater service to the cause of aeronautical progress than contributing their comments and suggestions.*

GOVERNMENTAL.

A continuing program of aircraft development both governmental and commercial.
A civilian, charged with championing a national air policy, is needed in the Government.
Aircraft committees in the House and Senate to hold aircraft hearings where civilians as well as government officials ▬ express their opinions.
A detailed aircraft budget for all Governmental Departments, and an annual statement of all expenditures.
An experienced staff of flying officers ■ the head of all governmental air defense services.
Coordination of all procurement and experimental aircraft work of the government under one agency.
Limitation of government manufacture to repair of aircraft and specialized work that cannot be done by private firms.
The elimination of the duplication of aerial functions and facilities by government departments.
A country wide Air Mail system of trunk lines connecting the principal cities of the country.
Establishment of a National Airway System through cooperation of the Federal Government with States and Cities.
A national aircraft law that will regulate aviation, administered by practical pilots and experienced aeronautical engineers.
Membership of the United States in the International Convention for Air Navigation.

COMMERCIAL AIRCRAFT OPERATION.

Creation of commercial ▬ lines by private enterprise ▬ government subsidy.
Encouragement of participation by private companies in aircraft races and competitions.
Encouragement of the training of pilots by civilian schools.
Creating ▬ Esprit de Corps among flying men all over the country by frequent gatherings at aviation meets.

INDUSTRIAL AIRCRAFT CONSTRUCTION.

Recognition that a sound aeronautical industry is a prime necessity of ▬ National Defense.
An active industrial association that will coordinate the aircraft industry and defend it from attack.
Encouragement of the designing of new types of aircraft by manufacturers by allowing them to retain their proprietory rights.
Concentration of manufacturing firms on specialized types of army and navy aircraft.
Encouragement of research by constructors, universities and other agencies as well ■ by the government.
Encouragement of an annual design competition for commercial aircraft.

CIVILIAN.

A national aeronautical organization composed of public spirited citizens that will take ■ strong position of leadership on national aeronautical policy.
An Annual Aviation Week during which the country will think of aerial progress.
The formation of local aero clubs by fliers for the purpose of stimulating flying in all localities.
Encouraging the public to fly and patronize the air mail and transport facilities.

PUBLISHER'S NEWS LETTER

In this issue we print ■ suggested program for a National Air Policy. It is the result of a compilation of the best suggestions from many ▬▬. While some of the points may seem at first to be controversial, we believe after careful study has been given to it that any disinterested person will feel that a step has been taken which will lead to a crystalizing of the thoughts that have been ▬▬ ▬ less indefinite in form in the minds of those who are thinking about the program of our AVIATION.

AVIATION has started this Air Policy program after having urged others to undertake such ▬ effort. Perhaps, however, by making such a plan elastic and subject to discussion and change, an aviation publication ▬ present it in ■ less permanent form than an organization that has to speak for varied interests.

* * * *

If the United States is to have any Air Policy it should ▬▬ from those who have had experience in aviation and have studied the development over a period of changes. It has been ▬ observation that those who are new in their study of air problems usually let their imagination project into the future rather than base their predictions on experiences of the past. A happy medium between the two has always been the practice of AVIATION. Looking into the future is always perilous in a new art or science, but when account is taken of the past, evolutionary progress results which seems neither fantastic to the initiated nor too conservative to the far seeing optimist. By some such progress it is hoped that the readers of AVIATION who, ▬ like to believe, comprise the leaders of aeronautic thought in this country may add to and change the Air Policy suggestions that have been started.

We ▬ sincere in ▬ belief that nothing is more necessary at this time than ■ definite statement of our air policy. Until ▬▬ group of thoughtful and serious believers in the future of aviation fixes on what should be considered ■ a National Air Policy, we do not think there will be sound progress made in any of the present aeronautical fields. For this reason, the policy has been divided into four parts, governmental, commercial, industrial and civilian. In some cases the plans may overlap, but that is unavoidable so long ■ the government and industry are so closely associated. If the mere statement of a tentative policy brings out discussion and suggestions we will feel amply repaid for the time and study we have put on the suggestions received. There is a personal obligation on every one who is thinking of aviation to contribute his opinion and have a part in this policy construction. It will have much greater value and weight if it is the result of such a collective effort. In this way AVIATION hopes to serve ■ a convenient medium for the initiation of a sound and helpful National Air Policy.

* * * *

In no way do we wish to infer that this Air Policy is that of AVIATION. Were we to write an air policy it would contain many ideas that are not embodied in the ▬ presented. For the sake of having ■ air policy available which would satisfy the widest range of opinion, controversial points have, to ■ large extent been eliminated. We think we can, with complete assurance of our disinterestedness, say that it is your duty to have ■ part in the formulation of such a policy. Furthermore, agreement without expression in ▬▬ definite form will not be doing one's full share in this work. If, after giving your best thought to these suggestions, you will send AVIATION your comments, there will be built up a file of opinions that will be available to those who want to know the real desires of aircraft people and not an individual attempt ■ a program. So, we again urge on you for the sake of our common aim to send any ideas that you may have as to ■ National Air Policy, be they critical or constructive. We hope that we have started something in this issue that may have ■ far reaching effect on our national life.—L.D.G.

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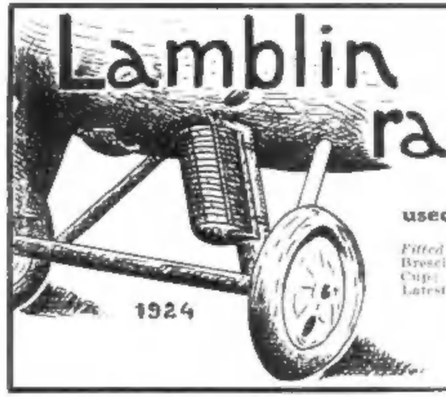

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Planes can be converted into land or water machines or water scooters to travel fifty to sixty miles per hour without the wings.
Above to be sold to the highest bidder on Saturday, July 12th, 1924 at 2 P.M. Daylight Saving Time at The Elastieap Warehouse, 11th & Hudson Streets, Hoboken, N. J. to satisfy freight and warehouse charges. The highest bidder to have the right to take one or all.
Inspection of planes can be made until date of sale. Immediate offers accepted. For further information communicate with.

A. T. BRUCE
1115 HUDSON STREET, HOBOKEN, N. J.
PHONE: HOBOKEN-7083

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The flying school of the Robertson Aircraft Corporation is one of the oldest and best known in the United States. All of the instructors are ex-army aviators with wide experience and our equipment is the best that money can buy. The flying field is approximately six miles from the city of St. Louis and is easily accessible by railroad, street car and hard surfaced roads. It is the largest and best privately owned field in the country and the International Air Races of 1923 were held here.

Our course includes thorough flying training as well as complete instruction in the over-haul, care and maintenance of both the airplane and motor. Every graduate of our school is guaranteed to qualify for a pilot's license. The tuition is $225 and may be applied on the purchase price of any airplane the student might select.

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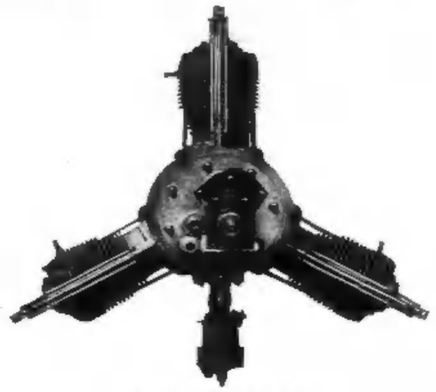

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